

Appl. No.: 10/563,233

Amdt. Dated October 22, 2008

Response to Office Action Mailed July 24, 2008

REMARKS:

Applicant appreciates the time and care the examiner has taken in examining the application. Applicant requests reconsideration of the objections and the rejections of the claims, and states the following in support.

The rejections are respectfully traversed, because neither Hansen et al, U.S. Patent No. 6,672,865, nor Japanese Patent JP 05223228A, anticipate the invention as claimed, and Hansen fails to render the invention obvious.

The system for mixing a process gas flow that is flowing through a housing of a kiln system according to the present invention differs from the art presented by the examiner in that the at least one injector for injecting injection gas into the housing is provided with swirling means for providing axial swirl to said injected gas. Thus, the gas injected by each injector is caused to swirl about the axis of the direction of injection irrespective of the overall flow of injected gas through the kiln, which might also flow with a rotational movement. This means that there is not only a rotational movement of the flow of the injected air through the kiln, but also a swirling movement of the gas leaving the single injectors, whose arrangement about the periphery of the kiln causes the overall rotational flow through the kiln.

According to the description of the present invention, for example page 26, lines 15-18; page 27, lines 4-11; and page 30, lines 4-6, the provision of swirling means that induce swirl in the injected gases enhances entrainment of the process gas flow. According to the cited sections of the description, this leads to a jet entrainment and mixing being approximately 2.5 times higher than for injection without such elements at the same velocity. This increase in jet

entrainment allows for the amount of air and fan pressure to be lower while, at the same time, achieving the same effect and giving a beneficial impact on both the installation and the process. Also, the creation of an internal recirculation zone is avoided.

It is important in this context to note that the cited art only teaches jets of injected air being directed in such a way as to cause rotational movement of gases about the longitudinal axis of the kiln. The cited art does not teach that the jets of injected air are caused to rotate about their own axes of injection.

Contrary to the examiner's findings, the nozzles shown in FIGS. 8a and 8b of U.S. Pat. No. 6,672,865 are not able to impart rotational momentum (swirling) to the jets of injected air. The shown nozzles are merely slots, causing, at best, a turbulent exit of the injected gases; it cannot be seen how these slots could impart a rotational movement to the jets.

The feature of swirling means being provided to the injectors cannot be taken from JP 5223228 either, in which document there is also shown only an overall rotational movement of the process gas flow about the longitudinal axis of a kiln.

It is hence clear that the independent claims of the present application define the invention as novel and non-obvious over the cited art. Considering the above advantages of imparting rotational movement to the jets of injected gas themselves with the swirling means provided to the injectors, it is also clear that the subject matter of the present application is neither anticipated by nor rendered obvious by the cited references.

Applicant acknowledges the finding of allowability of claims 23-26, and in view of the arguments above, it is submitted that the objection based on dependency from rejected claims should now be withdrawn.

Conclusion. Therefore, it is respectfully submitted that the rejections should be reconsidered and withdrawn; that the application is in condition for prompt allowance; and that all of the objections, rejections and requirements raised in the Office action have been met.

Early, favorable treatment of this application is requested. The examiner is encouraged to telephone the undersigned with any questions or comments so that efforts may be made to resolve any remaining issues.

Extension Request and Deposit Account Charge Authorization. The Commissioner is hereby authorized to charge any necessary fees, or credit any overpayment, associated with this communication, including fees for any necessary extension of time under 37 CFR §1.136(a) for filing this communication, which extension is hereby requested, to our Deposit Account No. 50-0305 of Chapman and Cutler LLP.

Respectfully submitted,

By: 

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CERTIFICATE OF FACSIMILE TRANSMISSION UNDER 37 C.F.R. § 1.8

Attorney Docket Number: 1717198
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I hereby certify that the attached correspondence, namely: Response to Office Action, was transmitted by facsimile on the date listed above, to the U.S. Patent Office at the facsimile number listed above, under 37 C.F.R. § 1.8.

Signature: 

Typed Name of Person Signing this Certificate: Jane S. Berman

Date of Signature: October 22, 2008